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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/876,171

06/08/2001

Kazunori Okui

401242

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08/02/2004

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EXAMINER

HENN, TIMOTHY J

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/876,171

**Applicant(s)**

OKUI ET AL.

**Examiner**

Timothy J Henn

**Art Unit**

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-7 is/are rejected.
- 7) ☒ Claim(s) 2 and 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5, 7.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered. The office notes that reference listed in the specification for which and IDS has not been filed appear on pages 8 and 13.

### ***Specification***

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando et al. (US 4,839,729).

**[claim 1]**

In regard to claim 1, note that Ando discloses an image sensor (Figure 2) comprising: an image sensing portion having a plurality of solid state photosensing devices for converting light into electric signals (Figure 2, Item 11), drive potential supply means for supplying a drive potential to the solid state photosensing devices (Figure 2, Items 13 and 22), amplifying means for receiving the electric signals and amplifying the electric signals with a variable gain (Figure 2, Item 18), and controlling means for controlling the variable gain of the amplifying means (Figure 2, Items 19 and 20), wherein the amplifying means changes the variable gain according to a dark signal or "reset signal" produced by the solid state photosensing device in a state in which substantially no light is incident (c. 2, l. 60 - c. 3, l. 39).

**[claim 6]**

In regard to claim 6, note that the image sensor of Ando further comprises storing means for storing reset signals produced by each of the solid state photosensing devices, wherein the amplifying means changes the variable gain according to the stored reset signals (Figure 2, Item 15; c. 3, ll. 22-39).

**[claim 7]**

In regard to claim 7, note that Ando discloses the use of photodiodes as the photoelectric conversion elements of the light receiving elements. Known photodiodes inherently produce a non-linear response to a quantity of incident light due to the effect of saturation. Therefore, the photodiodes of Ando must inherently produce electric signals in a non-linear relation with respect to a quantity of incident light.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando et al. (US 4,839,729).

**[claim 3]**

In regard to claim 3, note that Ando discloses an amplifier (Figure 2, Item 18) but does not disclose whether it is a linear or non-linear amplifier. However, it is well known in the art to use amplifiers which operate with linear input-output relations to avoid changing the relative levels of the input signals after they have undergone amplification (Official Notice). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a linear amplifier as the amplifier of Ando to keep the relationship between the amount of incident light between the pixels of the image sensor and the signal level consistent before and after amplification.

**[claim 5]**

In regard to claim 6, note that Ando lacks amplifying means which produces the electric signal in a digital format. However, it is well known to perform signal processing in the digital domain due to the stability of digital processing in many different environmental conditions which cameras are frequently subjected to (Official Notice). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

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invention was made to perform the amplification of Ando in the digital domain so that the amplifying means would produce the electric signal in a digital format.

***Allowable Subject Matter***

7. Claims 2 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**[claims 2 and 4]**

In regard to claims 2 and 4 the prior art does not teach or fairly suggest an image sensor wherein a drive potential supplies two switchable levels of drive potentials and an amplifying means changes a variable gain according to two different reset signals which are produced by a solid state photosensing device in response to the two switchable levels of drive potentials.

***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following shows the current state of the art in image sensors with variable gain amplifiers with gain control related to the value of a dark or "reset" signal:

- |     |             |              |
|-----|-------------|--------------|
| i.  | Temes       | US 4,602,291 |
| ii. | Maki et al. | US 5,612,739 |

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The following shows the current state of the art A/D converters which use dark or "reset" signals as reference points during conversion:

- |      |             |              |
|------|-------------|--------------|
| iii. | Webb et al. | US 5,285,293 |
| iv.  | Takase      | US 5,278,658 |

The following shows the current state of the art in image sensors which correct the pixel signals based upon two reset signals:

- |    |              |              |
|----|--------------|--------------|
| v. | Dhuse et al. | US 6,133,862 |
|----|--------------|--------------|

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J Henn whose telephone number is (703) 305-8327. The examiner can normally be reached on M-F 7:30 AM - 5:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJH  
7/22/2004



NGOC-YEN VU  
PRIMARY EXAMINER